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The Examiner rejected claims 1, 3, 5-8, 10 and 12 under 35 U.S.C. 112 as being indefinite. The Examiner cited the following:

In claim 1: The "multiple layers in claim 1 not clear". The word successive has been added in front of the "multiple layers" to indicate that the multiple layers stack over the substrate in the order of description. The word "first" in "first doped Si layer" in claim 1 has been deleted, because there is no second layer. The indefinite "bottom electrodes" in claim 1 has been replaced with the electrodes at the bottom. The "thin-layer of Si" has been replaced with thinner- than- substrate layer. The "p-doped wide energy gap semiconductor layer" has been replaced with "p-doped wide energy gap relative to the cladded quantum dot nanocrystals (CNCs) semiconductor layer". The word "appropriate" has been deleted to be not indefinite. The word "desired" has been deleted to be not indefinite.

In claim 3 The subscripts "x", "y", "a", "b", "c" have been defined at the end of the claims.

In claim 5: The "wide energy gap semiconductors" and "thin wide energy gap semiconductor" refer to the corresponding to the terms in claim, since claim 5 is dependent on claim 1.

In claim 8: The term "multiple layers" has been amended to be "multiple sub-layers" to avoid confusion. The "wide energy gap semiconductors" and the "thin energy gap semiconductor layer having n-type conductivity" refer to the corresponding terms in claim 1, since claim 8 is dependent on claim 1.

In claim 44: The term "bottom electrodes" has been replaced with electrodes at the bottom of the device to avoid being indefinite. The phrase "technique other than oxidation" has been deleted to avoid being indefinite.

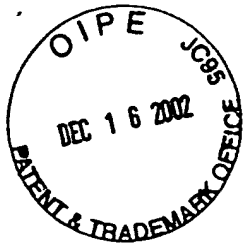
The Examiner rejected claims 1, 3, 5-8, 10, 12 and 44 under 35 U.S.C, 103(a) as being unpatentable over Fischer et al (US 6,147,365). Fischer disclosed an optoelectronic device, comprising "various layers of semiconductor materials". However Fischer did not disclose the use of pseudomorphic cladded quantum dots nanocrystals for lattice matched electroluminescence, which is the feature of this invention. By limiting the claim 1 for the function of lattice matching, it is believed that claim 1 is no longer unpatentable over Fischer. Since claims 3, 5-8, 10, 12 and 44 are dependent claims of claim 1, it follows that these dependent claims are also no longer unpatentable.

In view of the above, it is submitted that claims 1, 3, 5-8, 10, 12 and 44, as amended, are in condition for allowance. Reexamination of the objections and rejection is requested. Allowance of claims 1, 3, 5-8, 10, 12 and 44 at an early date is solicited.

Respectfully submitted,



Hung Chang LIN, Patent Agent, Registration No. 28,789
8 Schindler Court, Silver Spring, MD 20903
Telephone: 301-434-3571



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Faquir JAIN and Fotios PAPADIMITRAKOPOULIS

Art unit:1774

Serial No. 09/547,415

Filed: April 11, 2000

For: FULL COLOR DISPLAY STRUCTURE USING CNC THIN FILM

AMENDMENT (marked-up copy)

Commissioner of Patents

Washington, D.C. 20231

Sir:

In response to USPTO Action dated Jan. 30, 2002, please amend the application as follows:

REFERENCES:

Please delete the list references on page 22.

IN THE DRAWINGS:

Please add reference number "15" in Figure 2(a) as attached.

IN THE SPECIFICATION:

On page 2, line 15, delete "(30" and insert therefor --"3"--.

IN THE CLAIMS:

Please rewrite claims 1, 3, 5-8, 10, 12 and 44 as follows:

--1(once amended) A *p-n* junction electroluminescent (EL) device, comprising successive multiple layers of:

a semiconductor-on-insulator substrate;

a [first] *p*-doped Si layer grown on the said substrate, part of the layer being oxidized to isolate [bottom electrodes] the electrodes at the bottom of said device;

a thin layer of Si relative to the substrate which allows further epitaxial growth;

a *p*-doped wide energy gap relative to the cladded nanocrystals (CNCs) semiconductor layer grown epitaxially;

a layer comprising pseudomorphic cladded quantum dots nanocrystals (CNCs) deposited on the said wide energy gap layer for lattice-matched electroluminescence ;

a thin wide energy gap relative to the cladded quantum dot nanocrystals (CNCs) semiconductor layer relative to the substrate having n-type conductivity, grown on the CNC layer; and

a metal layer forming a plurality of top contact electrodes deposited on the p-doped wide energy gap semiconductor layer having [appropriate] patterned regions to confine current conduction in [desired] pixels of said EL device.

3. (once amended) [An] The EL device of claim 1, wherein said CNC layer [are] is selected from the group of semiconductor materials consisting of $Zn_xCd_{1-x}Se$ (core) - $Zn_yMg_{1-y}Se$ (cladding), $Zn_xCd_{1-x}Se$ (core) - $Zn_zBe_{1-z}Se$ (cladding), $Zn_xCd_{1-x}Se$ (core) - $ZnMgSSe$ (cladding), $In_xGa_{1-x}N$ (core) - GaN (cladding), GaN (core)- $AlGaN$ (cladding), and $ZnCdS$ (core)- $ZnMgS$ (cladding), where the subscripts x, y, z represent molar fractions.

5. (once amended) [An] The EL device of claim 1, wherein said CNC layer is sandwiched between [compatible] lattice-matched wide energy gap semiconductor layers selected from the group of semiconductors consisting of $Zn_aMg_{1-a}Se$, $Zn_aMg_{1-a}S$, $Zn_aMg_{1-a}S_bSe_{1-b}$, $Zn_aBe_{1-a}S_bSe_{1-b}$, $Al_cGa_{1-c}N$, and $AlInN$, where the subscripts a, b and c represent molar fractions.

6. (once amended) [An] The EL device of claim 1, wherein said *p-n* junction is reverse-biased electrically to operate said device in the avalanche mode.

7. (once amended) [An] The EL device of claim 1, wherein said *p-n* junction is forward-biased electrically to operate in injection mode.

8. (once amended) [An] The EL device of claim 1, wherein the layer comprising CNC further comprises multiple [layers] sub-layers of differing CNCs sandwiched between epitaxially grown thin film layers of p- and n doped wide energy gap semiconductors.

10. (once amended) [An] The EL device as described in claim 1, wherein said CNC layer has more than one [sublayers] sublayer of differing CNCs stacked to emit different colors and [white-light] white light .

12.(once amended) [An] The EL device as described in claim 1, wherein more than one said CNC [layer] layers are deposited to produce red, green and blue pixel elements for a display panel.

44. (once amended) [An] The EL device as described in claim 1 where the [bottom] electrodes at the bottom of the device are separated by [technique other than oxidation such as] reverse biased junctions.--

REMARKS

The list of references has been deleted. Missing reference number in Fig.2(a) has been added. Typographical error in the specification has been corrected. Claims 1, 3, 5-8, 10, 12 and 44 have been amended.

The Examiner objected to the listing of references in the application. The list of references has been deleted.

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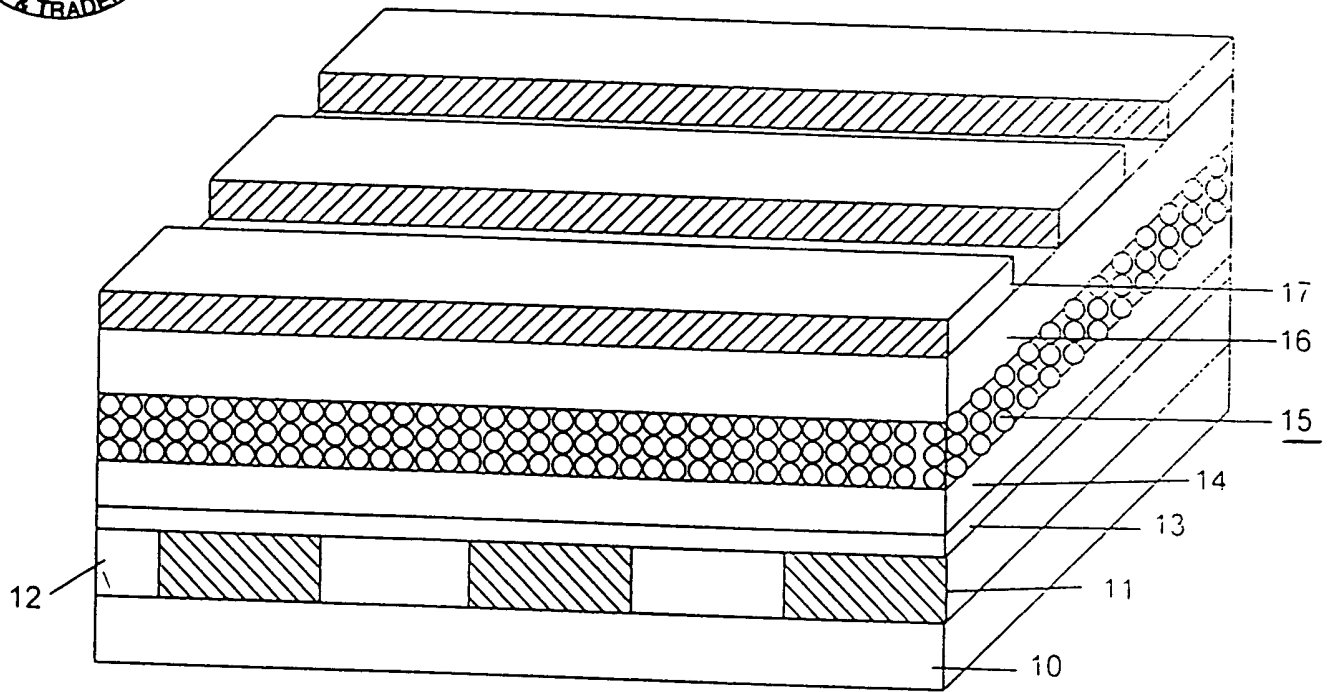


Fig. 2(a)

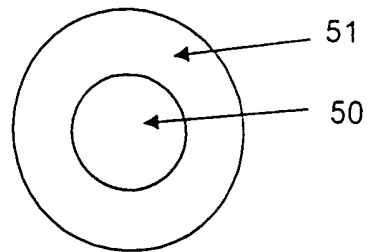


Fig. 2b